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ON

ARTIFICIALLY PRODUCED FEVER PROCESSES

IN THE HUMAN BODY.

BY Z. COLLINS McELROY,

Physician to the Muskingum County Infirmary; Fellow of the Zanesville Academy of
Medicine, etc.

[REPRINTED FROM THE OHIO MEDICAL AND SURGICAL JOURNAL FOR FEBRUARY, 1877.]



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With Complements of
The Author

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FEVER PROCESSES.

It is one of the apparent paradoxes of life that physicians, whose mission is to prevent and heal human sickness, should be called upon, in most civilized countries, to produce in their fellow beings, at some period of their lives, an artificial fever process; in other words, to make them sick. Generally it is in the young, though quite often at later periods; and more frequently, at periods without regularity, efforts are made to reproduce the particular fever process in the same individual, to which reference is here made, called vaccination.

In some countries each individual born and reaching a certain age must be vaccinated. National or municipal law compels it, and provides or appoints certain persons to perform the service, and enforces on parents or guardians penalties for neglect or refusal to comply with the requirements of the law.

In our own locality, the presence of one or more cases of small-pox in the city, or its vicinity, is the signal for a general vaccination of the young, and revaccination of both old and young.

This is a voluntary act on the part of many, though with more it is compulsory in one form or other, either by councils of cities or towns, or boards of health, or, as is more frequent with us, by boards of education, or superintendents or teachers of public schools. In our city vaccination is not carried into effect under any competent professional supervision, but each school superintendent or teacher assumes to judge of its necessity in every case, after inspecting the cicatrices left by former vaccinations.

Vaccination was introduced into this country from England about the beginning of the present century, and rapidly grew in favor, until within the memory of many persons now living it was universally regarded with great favor. This state of the public mind, professional and non-professional, continued not far from half a century. Then doubters of its harmlessness and efficacy began to appear. These have gradually increased, until now they form a ^{no} small minority of those best qualified to decide upon its advantages and hazards. As the evil effects sometimes following vaccination became too prominent to be poo-pooed away, attempts were made to explain them by referring them to the use of impure matter, or virus, conveying diseases from one person to another. Then epidemic and endemic influences temporarily prevailing in certain localities, where the bad results were numerous, were appealed to to explain them away. The bad results, however, increased in frequency and gravity—sometimes ending in death—until, to preserve it from falling into disuse, new expedients must be adopted to sustain it. Then came the explanation that the virus had, by frequent passages through the human body, become modified, and resort must be had to the original source of supply—the heifer. Now the fashion is to use the non-humanized matter, not in crusts, as formerly, but lymph from pustules on the udders of heifers, dried on ivory or quill points. Still the bad results continue to recur far too frequently, and so the number of persons who have had their faith in the harmlessness of vaccination seriously impaired continue to multiply.

The English medical journals contain many reports of very serious consequences occurring this season. Nor are these complaints confined to the British Islands. On the continent of Europe they are, if any thing, still more frequent. In England, just now, it is erysipelas, œdema, jaundice, etc., and both in England and on the continent more

or less mortality. This has been about our experience here, adding eruptions on the skin and chronic ulcers at and about points of insertion.

Until recently—and I mean within ten or fifteen years—it was not possible to answer the questions, "What is vaccination?" "What does it do, and how does it do it?" "How does it prevent small-pox?" as satisfactorily as it can be done now. But I believe—nay, I may say I know—that they can be answered with a near approach to accuracy now. That "vaccination is an antidote to small-pox," that "it is a preventive of small-pox," may once have satisfied inquirers, but does not now.

Various attempts have been made to explain its *modus operandi* in living bodies by referring it to some sort of fermentation, to the removal of matter susceptible of being modified by it, etc., but it was felt that they all fell short, and so the questions remained unanswered.

From the narrow basis which medical men have been contented to occupy in the study of life phenomena, it was not, and is not, possible to answer these or other like questions. Their mistake, past and present, has been, and still is, the consideration of the phenomena of life as apart from and opposed to the ordinary operations of nature around them. Nothing but catalogueing phenomena, and their subdivision in classifications, was possible from such a basis. Nothing of the relations of these various phenomena towards each other, and to other phenomena of nature, were possible, or ever made out.

But the dark cloud which has hitherto so effectually concealed from observation the inner workings of nature is slowly lifting, and some of the secrets of life have already been exposed to the light, and sooner or later all its workings will be explained.

Men of theology, men of science, students of nature, special students of life, have stood in the presence of one of life's

most important secrets all the time, but failed to see or perceive it. "Too fine for mortal ears," as one of our poets expresses it, thus:

"Heard melodies are sweet, but those unheard
Are sweeter," sang a poet dreamer well:
And somewhere in Arabia lives a bird
Whose little throat seems ever more to swell
With music, while her tender golden tongue
Throbs in its parted beak as if she sang,
Though ne'er by sound the throbbing air is stirred,
Save when on almond trees she folds her wings.
Yet men do follow her, and cry, "She sings;
Yea, always sings, had we but ears to hear."
And when across the vacant morning clear
Her rare and rapturous melody she flings,
"Oh, God!" they cry, low listening 'neath her tree,
"How ravishing sweet the unheard notes must be."*

"Too fine for mortal vision" have been "the forms of organic structure," the special combinations of matter adapted for and capable of performing the varied functions of complex animal existence, and so have been lost. The "forms of structure," which the material common to the earth of which they are composed, constitute the real secret of life. They open many doors admitting light into places hitherto shrouded in impenetrable darkness. Looking at them under powerful microscopes can not, and does not, throw light upon their functions. As well might the physical appearances only of the vaccine virus be studied to comprehend what it does in living bodies, introduced for the first time; or the physical appearances of materials used as medicines, studied to understand what they will do in living bodies. These are all "too fine for mortal vision." *mortal*

But to return from this digression to the dryer yet more instructive details of science. Observations and experiments, extending over many centuries of time, and by many

* H. B. Bostwick: Atlantic Monthly, December, 1876.

different persons, have conclusively established the following general principles concerning living beings and things. Slightly modified, they are applicable alike to inorganic and organic nature:

1st. Special "forms of structure" for each and every function performed by a living being or thing.

2d. Each special "form of structure" performs its natural or physiological function at the direct expense of its substance, as a candle in giving light; so much light, so much candle gone—its material decomposed, and returned to positions in inorganic nature. So, so much function performed by any tissue or viscus of a living body, so much structure less.

3d. Each special structure, in the act of decay and the performance of function, stores up the force in the requisite material for its own reproduction and perpetuation from new material.

4th. This special material, containing the force stored up in it for the renewal of the various structures from which it was derived from new material—the food eaten—is taken from the general *débris* of the wasted and wasting tissues, by the lymphatic system, and united with the ingoing stream of material, new and old, near the right auricle.

I believe that these general principles are as well established in organic life as the law of gravity, or that each living being or thing is due or owing to death.

With these well established principles in mind, a reply to the first question, "What is vaccination?" can be made so as to embody all the facts concerned and understood by most persons.

In the fewest possible words, the answer is: The artificial production of a fever process in the person vaccinated.

What does vaccination do?

Again, in the fewest possible words, we reply: Spoils more or less of existing tissue.

How does vaccination do this?

In the same manner as any other causes of fever operate—by modifying the molecular arrangement of the materials of structure, and, therefore, dynamic capacity.

The structures of the living human bodies have no permanence—none for any appreciable time. Whoever has read this paper from the commencement has not, at the moment he reads this line, the same body he had then. It does not change the actual facts concerned to say that the changes have been small. Men would not live to be threescore and ten if they were more rapid. The simple truth to realize is, that the human body has no permanence, alive or dead. The difference between an animate being and an inanimate thing is, that the one provides, within certain limits, for its own perpetuity; the other has no capacity for self-repair.

The sequence of events in vaccination and any other fever process, irrespective of type or external appearances, are exactly the same. The spoliation of tissue—its capacity to perform physiological or natural duty, more or less modified—must occur as a preliminary, and constitutes, in fact, the necessity for a fever process of any type or character.

Vaccine lymph, or matter, is material, storing up in its complex chemical structure force, or capacity, or power to modify, to a greater or lesser extent, the whole of the processes of nutrition or repair of a living body. It is worthy of special notice that vaccine matter, to produce the desired results—a fever process—must be inserted hypodermically. Introduced by the stomach or rectum, no such results follow as after insertion through the skin. The very first step towards vaccination is to damage the skin at a certain point by physical means—scratching, scraping, or cutting. On this abraded skin is placed the matter taken from a vaccine pustule on another person, or on a heifer, if bovine matter is to be used.

From the moment of contact the changes commence, “had

we eyes to see them." As they are "too fine for mortal vision," nothing can be known certainly until the phenomena acquire certain proportions, which bring them within the scope of our means of observation. At the end of one hundred hours, if humanized matter has been used, and from one to two hundred, if bovine, the changes, or modifications of structure at the point of insertion, are striking enough. An inflamed spot, surrounded by a zone of indurated or hardened tissue, exists. This gradually extends, when the general malaise—loss of dynamic capacity—becomes very marked. The lymph glands in the neighborhood share in the disturbance; while the temperature may be from 2 to 6° F. above natural. Appetite—demand for new material—much decreased, or modified, or gone entirely. Disposition, and mental and moral characteristics, much modified. In fact, all the phenomena of a fever process. At the end of two hundred hours, a larger or smaller space around the point of insertion may be greatly swollen and inflamed. The pustule, or pustules, have reached their full development, and from this, in straight or uncomplicated cases, the gravity of the phenomena decline. From the twelfth to twentieth day, the crusts formed at the point of insertion fall off, leaving a pit or excavation in the skin. New crusts form and fall off, or are detached by accident or design. From four to ten weeks elapse before the points of insertion return to the color of the surrounding surface.

Sometimes the actual healing process is long-delayed. From simple erythema to moist gangrene may be the condition of more or less structure surrounding the point of insertion, leaving an unhealable ulcer, or a large and unsightly cicatrix; or, as has been the case, death.

Examine the scar left at the point of insertion. The amount of physical violence used in the insertion of the "matter" does not account for the structural alterations of the skin found there. The "matter" inserted failing to

"take," the damage to structure then, incident to using it on an abraded surface, soon heals up, leaving no trace of any kind to show that the attempt had been made. Why this difference in the appearances of the surface after the "matter" failing or "taking?" A reply, based on the facts of a physical examination of the scar, would hardly fail to be truthful, and embody the real condition of things there and elsewhere in the body. The cicatrix—a name for the changed skin at the point of insertion—does duty as skin, just as cicatrices do from any cause elsewhere on the surface, but it is not natural skin. Now, it is very common—absolutely universal—to say that the sun rises in the morning and sets in the evening. It appears to do so. But does it do so in fact? If seeing with the natural eye is to be trusted to get at the truth it certainly does. But sight does not always detect fallacies. We may continue to speak, and our almanacs may continue to publish the time of the sun's rise and setting, in tables, yet most people know that the sun neither rises nor sets. Our saying so is a convenient fiction to express an apparent fact. We may call the changed skin left by the vaccine pustule a cicatrix, or scar, but it is also true that the structure of the skin has been changed, not so as to prevent it doing the duty of skin, but, nevertheless, greatly modified, when compared with the surrounding tissue.

Has the remainder of the body undergone no changes of structure—to the eye, assisted or unassisted? Apparently not. If it has not, if the whole of the tissues have not undergone more or less structural changes, vaccination would be a very useless proceeding, for it would not prevent the recurrence of small-pox, so called.

These structural changes, like many other phenomena of nature, are far "too fine for mortal vision."

What vaccination really does, therefore, is to produce, artificially, the necessity for a fever process, by means which more

or less modify the structural arrangement of the materials of structure, not so as to prevent the performance of natural function, or more or less apparently natural function, in the bodies of those subjected to its operation. In a large number of persons this process can not be repeated through life.

“How does it prevent small-pox?”

The materials, storing up the force, which, introduced into a living body, produce the train of phenomena called small-pox, produce structural changes in a manner so like that of vaccination that they admit of substitution, the one for the other. And the reason that vaccination is preferred, and sought after as a protection against small-pox, is that its phenomena are brought about with less violence, and, therefore, less risk to life.

It is seen, therefore, that both vaccination and small-pox terminate in a modification of the structural arrangement of the material of living bodies subjected to their processes, on which life momentarily depends, always and necessarily accompanied by more or less risk to life. But these changes are “too fine for mortal vision.” It requires the same mind work to comprehend them that it takes to understand that the snow which to-night covers the face of the earth in our locality ascended, in the form of invisible vapor, from its surface, right past our eyes, though we could not, as we did not, see it.

Are all persons, irrespective of their age, health, and other conditions of life surrounding them, proper subjects to be made to pass through the phenomena of the artificially produced fever process called vaccination? I think not. And it seems to me that the apparently accidental bad results occasionally following indiscriminate vaccination fully sustain this conclusion.

Men, women, and children who reproduce their structures imperfectly, as in the so-called scrofulous condition; or with difficulty, as in so-called chronic dyspepsia, liver complaint,

etc.; or where there are chronic skin diseases, so called; or, in a word, persons of weakly constitution, or in the decline of life, it seems to me, should be vaccinated only under the press of urgent necessity. Better far that such persons take the risks of small-pox, except only when fully exposed to contagion through life, rather than have the certainty of vaccination, with its possible sequelæ.

I am prompted to make these remarks partly in consequence of the presence of some small-pox cases in our city at this time; partly because I have sought a suitable opportunity to state the results of my observations for a long period, and partly from the exercise of authority on the part of the Board of Education in ordering all children in any way connected with them to be vaccinated or re-vaccinated, as the case may be, or be excluded from further attendance at school. And all this without any reference to their condition of health or possible bad consequences. The teachers in the several school buildings examine the arms of pupils, and decide whether they have been properly vaccinated or not, generally winding up with sending them all away to be vaccinated before returning to school.

I could give, did time permit, many clinical cases, illustrative of serious results following vaccination. But these have now become so common that they are well known to the profession and people. I have, during my life, done my full share of improper vaccination; and may do some yet, but never without informing the parents (if children are to be vaccinated) or others who ask for it. And this very often against pecuniary interest.

I do not desire to convey to you the impression that I am opposed to vaccination; far from it. On the contrary, I am a firm believer in its propriety and necessity in a large number of cases. But I am also convinced that weakly children and youth, and most persons past fifty years of age, have no business with it, only as the smaller of two evils,

viz., a very strong probability of small-pox infection, or the certainty of vaccination.

The various expedients resorted to to check the declining confidence of the people in its propriety in every case, and reinstate it in full confidence, must necessarily fail. But in the end such measures will certainly be adopted as will secure its good results, and reduce its evil consequences to their minimum.

I here purposely confine my observations to the artificial fever process brought about by vaccination, leaving out of consideration fever processes brought about by other means, as inoculation with small-pox virus, blisters, and by some remedial agencies. I have recently seen an artificial fever process brought about by calomel and ipecac, with some very surprising results, in a case of chronic inebriation.

I offer the following conclusions, at which I have arrived after many years' observation and study of the subject, for consideration:

1st. That vaccination—the artificial production of a fever process in human bodies, resulting in modifications of the structural arrangements of its materials, and because of this fact—must always be attended with more or less risk to life and health to some persons.

2d. That weakly children and youth, and adults in the decline of life, are not proper subjects in whom to produce an artificial fever process, resulting in changing or modifying the structural arrangement of their tissues, for any other reasons than those of the most imperative necessity.

3d. That the authority now exercised by boards of education, school superintendents and teachers, in compelling vaccination and re-vaccination, at each recurring small-pox scare, without competent professional supervision and assistance, is well calculated to bring increasing discredit on a really useful and necessary sanitary measure.



